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A group of 20 teenagers in a Mobilization for Youth project were involved in the invention and production of educational games. The direct, cooperative participation in such an educational process made the experience a real and creative learning activity which had a comprehensible, achievable goal. These games were not made for competitive sale but were sold in a local cooperative store for a modest price. The experiment shows that the activity of inventing a game can motivate disadvantaged youth to exercise initiative and creativity and to work successfully in a self-directed manner. (NH)

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MOTIVATING LEARNING THROUGH INVENTION OF GAMES

A Report on an Innovative Approach to the Teaching of Basic Academic Skills to the Disadvantaged.

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The disadvantaged child lives in an environment bounded by walls of frustration. Harassed parents, slum housing. low expectations from teachers, and the concomitant lack of success in academic learning--all combine to produce a self-image that predisposes the child to failure. The disadvantaged child considers himself inadequate in mental skills, is pessimistic about his chances of competing in the world of work, and is generally resigned to his legacy of deprivation. These attitudes produce a psychology of defeat that feeds upon itself and reinforces the child's low self-esteem.

The main task of education for the disadvantaged child is to break the chain of self-fulfilling prophecy by proving to him through personal experience that he is capable of intellectual and creative accomplishment, that he can competently plan and carry out long-range tasks that have meaningful outcomes, and finally that he can feel a strong sense of enjoyment in doing so.

The psychology of defeat makes such goals difficult to attain within the existing school curriculum. New motivational approaches are therefore required in which learning begins with activities that bear little outward resemblance to traditional school programs. Yet, if these activities are to have educational meaning the essential reading, writing, mathematical, and social skills must be included appropriately.

Mobilization For Youth, a pioneer anti-delinquency organization that has functioned on the Lower East Side of New York City for the past five years, has as one of its major goals the involvement of young people in activities that would stimulate them to raise their educational sights. The organization encourages experimentation with new approaches toward educating the young people of this community.

Prior to the 1967 summer program I proposed to Herbert Goldsmith, Director, Division of Educational Opportunities, and Charlotte Oshwetz, Director of Community Education, that an experiment be conducted with a group of young people to see if the activity of invention and production of educational games could serve as the medium for motivating learning.

A small-scale project involving Neighborhood Youth Corps members was undertaken during the summer of 1967. Twenty young people (ages 14-16) were employed and assigned the task of producing simple word and number games for subsequent sale at a local co-op store that was to be opened in the fall of 1967. The first products to be manufactured were some educational games which I had designed for this purpose. Lacking a factory and machinery these games had to be made by hand, but for our purpose this was not a serious drawback because mass production with the aid of modern high-speed machines tends to limit the areas within which initiative and judgment can be exercised by young people.

Ultimate sale of these games was viewed as an important motivational element in the program because it was essential to have the young people feel that their work would be of use to others, and not just busy work.

The basic questions to be answered in this experiment were:

1) Could these young people be encouraged to invent their own games, which they would then produce by themselves for subsequent sale?

2) What factors in traditional learning were involved in the process for which invention of games might serve as a motivational activity?

After the group had been organized and had produced the assigned games for several weeks I began to meet with them in weekly sessions with the goal of stimulating the young people to invent and produce new educational games. Their initial reaction was not too encouraging. There seemed to be some interest, but I sensed that it was strongly tinged with skepticism about their ability to live up to expectations. In retrospect it seems to me that this seemingly negative initial phase had substantial value in that it served to confront the group with the problem. It is my opinion that such a confrontation tends to increase the dramatic impact and educational value of outcome, provided that there is substantial success in achieving the goal of inventing and producing games.

The initial exploratory phase was then followed with a more limited approach in which the basic framework of a game was outlined, and the specific details were left for the participants to fill in. I distributed file cards and requested that each person think of a sentence of at least five words and then write the words of the sentence on cards, one word per card. The cards for four people

were then pooled, and each group of four was asked to invent a sentence game with the cards in their possession.

After some animated discussion in the small groups, one participant reminded me that the time for their coffee break had passed. I dismissed the group for fifteen minutes. But one group of three Negro boys did not leave--they were too deeply immersed in designing a game. And one Puerto Rican boy, who could barely speak English, also remained behind, playing with the cards.

Suddenly, one of the Negro boys declared that parentheses were needed at the ends of some words. Apparently, he had observed that it was difficult to match cards properly without allowing for variations in the word forms because of different usage in the sentence. He solved the problem with the use of parentheses at the ends of some of the words, to indicate that the player could supply his own ending. This applied, of course, to the verbs, where addition of "s," "ed," "ing," etc., was required to make sense in different contexts. Plurals for nouns also required such parentheses.

A few minutes later, another boy in the group announced the need for "punctuation cards." The game this group was creating was based upon the building of a sentence, word by word, with the players placing cards on the table, one at a time, in succession. The objective for each player was to add a word which could make a meaningful sentence. According to the rules devised by this group the game ended when anyone completed a sentence that could not be continued by the other players. The person completing the

sentence won the game, collected the cards of the others, and counted them as his score. "Punctuation cards" increased the scope of the game by making it possible for a player to extend a sentence that would otherwise be ended prematurely.

During the coffee break the Puerto Rican boy called me over and pointed to a sentence he had assembled from the cards. He beamed with joy at his success.

When the rest of the group returned, the boys who had remained behind were asked to explain their game to the others. At the conclusion of the explanation the group spontaneously broke into applause. I considered this to be an appropriate moment to end that session with the suggestion that the group spend part of their working time during the following week designing different sentence games or other educational games that were originated completely by them.

This was the turning point. At the next session, a week later, there was an outpouring of games. The session began innocently enough with a discussion of refinements in the sentence game invented the previous week. The inventors had made substantial changes because the rules originally set forth did not work satisfactorily when they tried playing the game a number of times. Apparently the scoring was too haphazard, so they shifted the emphasis to playing out the last card in the hand rather than completing a sentence.

There was considerable discussion about practical aspects of production of the game. How many cards were needed per game? What words would be included? How could balance in the selection of

words be achieved so that different parts of speech would be properly distributed to make sentences?

The designers had become aware of the need for selecting a proper proportion of nouns, verbs, and other parts of speech. They agreed that about 100 cards would be a suitable number for a game. But then, could we afford to put so many 3" x 5" file cards in each game? Wouldn't that be too costly? Could we use smaller cards and cut costs? The members of the group were given sheets of paper and were asked to imagine that it was a large card to be cut up into smaller cards, each with a word on it. The number of cards that could be produced, and their arrangement on the sheet, could be observed by folding the sheet of paper. The group was asked to fold their sheets so as to yield a large number of cards, yet of a size that would not be too small. Finally, a size about 1¼"x2½" was agreed upon.

There was also some animated discussion about a name for the game. Various suggestions were made, with the decision left for the group of boys who designed the game.

"Any other games?" I asked. Silence! I was beginning to wonder if the creativity was confined only to one small group. Hesitantly, one girl brought forth a bingo game she had designed using word cards instead of numbers. She had prepared a number of large bingo cards together with appropriate small word cards for covering spaces.

"Any others?" Again silence. "Carmelita has a game!" her neighbor called out. Carmelita bashfully brought forth a maze game

in which players raced for treasure by counting steps selected by picking hidden number cards. Then, one after the other, the games were brought out by their creators, with much trepidation and a good deal of prodding from group members. One Puerto Rican boy had devised three games that revealed a high degree of originality. Judging from his external appearance and general manner one would hardly have expected the depths of intelligent creativity which he clearly possessed.

Several other young people had each produced two games. About half the group had developed at least one game each. In some cases the games were designed by groups of four. Everybody had become involved to some extent.

At this point, I suggested that each person produce his game or games, signing his name on each as the designer. Various production problems were discussed. Should the game be mimeographed or made by hand? Should it be on paper or cardboard? What size would be economical yet consistent with proper use of the game? The answer required judgments and decisions involving a new and vital experience in creative thinking for these young people.

It is obvious that a large number of traditional skills and concepts are involved in the process underlying the activities described above. Oral and written language skills are called for in

numerous ways. Discussion is essential to work out an idea within a group and to explain it to others. Rules for a game generally need to be written--and such rules must be clear, concise, and comprehensible. Writing an assigned composition is a private matter between pupil and teacher and therefore has low motivational value for the child who never expects to use this kind of skill. But writing rules for a game that others will use is a totally different matter. The child then feels the necessity for the written rules to be perfectly clear. No author wants to publish writing that is improperly spelled and grammatically incorrect. And the child who wants to publish rules for a game is now put in the same position as an author; his published rules for the game must be correct, and he can see the need for working to make it so.

Mathematical concepts enter into the design and use of many of the games. Counting, addition, and subtraction are necessary for scoring. Drawings on game boards generally involve geometrical constructions, measurement, and computation. Competent artwork is obviously an asset in making presentable games. No doubt, one could encourage interest in geography, history, and other subjects by suggesting invention of games in these subject areas.

In effect, the invention of educational games involves young people in the educational process directly and intimately, not as

passive learners but as effective participants in helping to educate or entertain others. Thus, there are basic value outcomes over and above the personal and educational ones.

This type of educational activity can serve as a counterbalance to the strong tendency in traditional school curricula to fragment experience by putting it into cubbyholes labelled "language," "mathematics," "science," etc. Such compartmentalization makes it difficult for the children to see the forest for the trees. Without the strong long-range educational goals of the kind provided in most middle class environments it is difficult for a child to see why he should worry about reading, writing, spelling, grammar, mathematics, and art. He needs the fundamental experience of being confronted with the necessity for using these skills. It is difficult enough for adults to be motivated to activity by long-range goals set by others. Why should we expect young children to possess any more of the quality of farsightedness than adults possess?

An activity such as the invention and production of games for use by others provides a comprehensible, achievable goal because the problem is <u>real</u> to the children. Since at the same time, the activity requires the use of a wide variety of skills from the origin of the idea to design and production, the need for mastery of skills is made clear and compelling. Furthemore, activity centered around

games is peculiarly applicable to the problem of motivation because every child loves a good game. In fact, there is no reason why this approach could not be applied to other projects, such as production of furniture and other useful articles.

It would be disastrous to attempt to put such activities on an economically competitive basis. Young people cannot be expected to compete with professional designers and modern machines both in terms of quality and cost. The activities must be considered essentially educational, with most of the values in the internal motivational outcomes, and a minor portion of the values in the utilitarian aspects of the production of goods. In terms of purely economic "labor costs," each game produced by the children probably cost in the neighborhood of one or two dollars, yet it was sold for only a few cents in the co-op store. It was important to establish some sort of price, no matter how minimal, because to do so represented a measure of the desirability of the product. Thd fact that someone would be willing to pay for the product, no matter how low the price, served as a real stimulus to creativity.

No attempt was made to evaluate the effect of the game-invention approach on the young people in the group through formal, objective testing. To do so certainly would have taken some of the spontaneity out of the situation; nor were funds and facilities available for that purpose or for subsequent follow-up. However,

observation of actual accomplishment as well as group reactions and responses are reasonable indicators of the effectiveness of the approach. For example, it was observed that before the introduction of invention of games the members of the group were passive, lackadaisical, detached, and relatively uninterested in their work. After all, a job is a job. School is school. But after the ice had been broken there was animated discussion and busy activity. The members of the group were communicating with each other and working with a purpose in a highly motivated manner. What is equally significant, they did produce worthwhile games of their own invention.

The experiment indicates that the activity of invention of games could serve to motivate disadvantaged children to exercise initiative, to be creative, and to work successfully in a self-governed manner. It seems likely that such creative activity could also serve as the starting point for traditional learning activities as the need for such learning becomes apparent to the children.

How does one measure such activity in terms of customary outcomes? The activity has real meaning for the children, and consequently it is highly motivating. And highly motivated activity provides a firm base for effective learning. Perhaps the best measure of such learning is the actual accomplishment of a complex task.

A key element in this particular approach is that there is a practical outcome for creativity and effort. People in the community would buy and use the games produced. People would read the names of the designers of the games and appreciate the effort. The achievement would not be just a private matter; it would be there for others to see.

No pretense is made that this approach, by itself, can solve the severe educational problems of the disadvantaged child. But there is no doubt that the techniques can help provide the motivation to learning so essential for improving the self-image of a defeated child.

One also wonders what the introduction of <u>usefulness</u> into educational activity would mean for our schools in general. After all, adults are obviously strongly motivated to perform activities they consider useful. Would we not expect children at all ages to be similarly motivated? Should we not weave into our curricula a number of activities with useful outcomes precisely because such activities have strong motivational and other educational values?

Perhaps the approach described above would supply some counterweight to the current excessive stress on externally motivated activities through the use of audiovisual equipment and computers. These devices have important uses. But the human values with strong motivational connotations are missing. First and foremost, we need

to engage the drive to learn that is latent in many of our children, and particularly, in disadvantaged children. All too often this drive is suppressed by excessive emphasis on external and long-range motivations in a setting in which the learning activities are dominated and directed by a teacher, computer, or audiovisual device. By introducing into the curriculum the element of initiative through practical and useful activity, educational planners—both inside and outside the school situation --could play a key role in shaping the educational systems of the future.